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OBJECTIVES: Diabetes is a serious, costly metabolic disorder with a rising prevalence worldwide. Chromium has long been shown to improve insulin sensitivity, lipid profiles, and blood glucose in insulin resistance and type-2 diabetic patients. **METHODS:** All relevant databases were searched up to December 2011 limited to human studies in English language. Clinical studies in newly onset patients with type-2 diabetes reporting use of chromium at least for 4 weeks and outcomes of fasting blood glucose (FBG), hemoglobin A1C (HbA1c), triglyceride (TG), low density lipoprotein cholesterol (LDL), high density lipoprotein cholesterol (HDL) and body mass index (BMI) were identified. Data of before and after use of chromium intake were compared. **RESULTS:** The functional outcome data from clinical studies revealed that our of 834 studies, 39 met inclusion criteria. Seventy present of articles demonstrated a decrease in FBS while 23% showed an increase. Forty-seven percent of studies showed an increase in HbA1c, while 15% a decrease. TG in 60% of studies showed an increase while in 15% a reduction was reported. LDL cholesterol in 60% of studies showed a decrease and in the rest there was no report of increase. Forty percent of studies showed a decrease in HDL cholesterol while 30% showed an increase. BMI in 40% of studies decreased and in 7% of cases increased. **CONCLUSIONS:** In clinical studies, average of mentioned parameters were improved significantly after administration of chromium in patients with type 2 diabetes in a dose-dependent manner with no side effects. This systematic review indicates beneficial effects of chromium in diabetic patients.

PDB13

BARIATRIC AND METABOLIC SURGERY IN CHINA - EFFICACY OF MINIMALLY INVASIVE PROCEDURES

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OBJECTIVES: Growing rates of obesity and type 2 diabetes mellitus (T2DM) are major health problems in China. Bariatric surgery is an effective treatment for patients with clinically severe obesity additionally improving co-morbidities, while metabolic surgery is a procedure aimed at resolution of T2DM. The main objective of our study was to assess the efficacy of both procedures performed on Chinese population. **METHODS:** A comprehensive search was performed in PUBMED and websites of Chinese medical databases and journals including: www.wanfangdata.com, www.cqvip.com, www.cnki.net, www.docin.com, wenku.baidu.com. Studies met the inclusion criteria if they enrolled obese Chinese patients with or without T2DM undergoing following laparoscopic procedures: sleeve gastrectomy, Roux-en-Y gastric bypass, adjustable gastric banding, single-incision sleeve gastrectomy. **RESULTS:** Our search retrieved 17 studies (2339 patients) of which 7 included T2DM patients (N = 374) exclusively. Overall, mean BMI reduction one year following surgery ranged from 5.7 to 16.8 kg/m². Excessive weight loss ranged between 25.4-81.25% and 18.4-72.2%, after 1st and 2nd year of follow-up, respectively. Moreover, 2 years following surgery hypertension resolved in 9-98% of patients, hyperlipidemia in 42-100%, arthralgia in 90% and sleep apnea in 68-100%. In the subset of diabetes patients resolution of T2DM was observed in 33%-93% individuals 1 year post-surgery. In the same time mean HbA1c was improved by 1.2-4.4 percentage points, FBG was reduced by 37.8-107.2 mg/dl and BMI declined by 5.7-7.1 kg/m². Bariatric procedures led to complication rates ranging from 0 to 23.5% during the first post-operative year and from 5 to 57% during the second year. Reported mortality was low and did not exceed 0.47%. Additionally, surgery had beneficial effect on patients' quality of life, which improved especially in physical, emotional and social domains. **CONCLUSIONS:** Bariatric surgery is effective in achieving durable weight loss and as well as improvement or resolution of T2DM and other co-morbidities.

PDB14

PREVALENCE OF HYPERTENSION AND/OR OBESITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS IN ASIA: A SYSTEMATIC LITERATURE REVIEW

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OBJECTIVES: Hypertension and obesity are associated with long-term complications of type 2 diabetes mellitus (T2DM). A systematic literature review assessed the prevalence of these comorbidities in adults with T2DM in Asia. **METHODS:** Electronic databases (PubMed, Embase, Cochrane Library) were searched for publications related to T2DM plus hypertension and/or obesity (English, 2001-2011). Bibliographies of included studies were also examined. **RESULTS:** Of 2303 abstracts identified, 38 observational studies presented relevant data across 14 countries/regions in Asia. Prevalence rates reported here are for adults with T2DM. In China, hypertension prevalence was 49.9%-60.6% when hypertension was defined by blood pressure cutpoints of $\geq 140/90$ mmHg and/or use of antihypertensive medicine, whereas the prevalence was 74.7%-76.5% when blood pressure cutpoints were reduced to $\geq 130/85$. A study in Israel using cutpoints of $\geq 140/90$, $\geq 130/85$, and $\geq 130/80$ mmHg found hypertension prevalence rates of 60.2%, 76.5%, and 85.8%, respectively. In studies reporting prevalence by a single hypertension definition, the prevalence rates ranged from 61.0% to 78.1% when the cutpoints were $\geq 130/80$ or $\geq 130/85$ mmHg and 13.6% to 78.4% when the cutpoints were $\geq 140/90$ mmHg. Obesity prevalence data were limited. Cutpoints for defining obesity by body mass index (BMI) or waist circumference (WC) varied among the studies. The obesity prevalence rates by BMI were: Israel, 20.1%; Japan, 33.9%; Qatar, 53.8%; Taiwan, 38%-52.7%; Jordan, 58.6%; Saudi Arabia, 83.4%; Iran, 85.5%; and by WC were: Japan, 24.3%-27.0%; South Korea, 37.2%; Pakistan, 61.5%; India, 67%. Few studies reported

comorbidity of both hypertension and obesity, with varying definitions of each comorbidity. The prevalence of hypertension with obesity was: Saudi Arabia, 10.7%; Japan, 18.0%-20.6%; Jordan, 76.6%; Israel, 69.7%-93.3%. **CONCLUSIONS:** In Asians, hypertension and obesity, separately or together, are common comorbidities of T2DM. Accurate, consistent reporting of their prevalence will help quantify efforts needed to manage these comorbidities and their long-term health and cost consequences.

PDB15

A1C VARIABILITY IS ASSOCIATED WITH THE RISK OF DEVELOPING NEW DIABETES FOR THE HEALTHY ADULTS

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OBJECTIVES: The association of A1C's variability with developing new diabetes has been little studied. We aimed to evaluate the effect of visit-to-visit A1C variability on the risk of developing new diabetes in healthy adults in Japan. **METHODS:** Population-based, cohort study from 2005 to 2008 in Tokyo, Japan of healthy adults not taking diabetes medication and with a HbA1c lower than 6.5% at baseline. Based on annual measurement of serum HbA1c we calculated the annual visit-to-visit variability, and used this as a predictor of new onset diabetes in a multivariate logistic regression. **RESULTS:** At baseline, 14,587 people (50% female) with a mean age of 51 years old (SD: 12 years, range: 23 to 92), a mean fasting plasma glucose (FPG) level of 98.4 mg/dl (SD: 9.3 mg/dl) and a mean HbA1c level of 5.3% (SD: 0.4%) had annual check-ups over 4 years. After adjusting for the other potential risk factors new diabetes was predicted by the A1C variability (odds ratio (OR): 10.3 for highest (>= 0.16%) versus the lowest quantile (<0.08%), 95%CI: 5.9 - 18.0) and by the baseline A1C (OR: 55.2 for A1C of 6.0 - 6.4% versus A1C of <5.0%, 95% CI: 13.2 - 230). FPG (OR: 1.1, 95%CI: 1.1 - 1.2) and Smoker (OR: 1.8, 95%CI: 1.3 - 2.6) weakly but also significantly related to develop the new diabetes. For predicting the development of diabetes, the combination of the level of A1C at baseline and the variability (AUC for the ROC=0.94) was superior to the level of A1C at baseline alone (AUC=0.89). **CONCLUSIONS:** Visit-to-visit variability in A1C independently added to the baseline A1C in predicting the risk of developing new diabetes for the healthy adults. We should consider not only the baseline A1c level but also variability in A1C to prevent development of the diabetes.

PDB16

PROSPECTIVE AND RETROSPECTIVE SAFETY REVIEW OF PIOGLITAZONE IN A MEDICAL CENTER

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OBJECTIVES: The FDA warned on June 15, 2011 of the bladder cancer risk associated with pioglitazone use. Therefore, we conducted a retrospective review of pioglitazone use in our hospital, to find out high risk patient, provide FDA safety advice by using electronic message in computerized physician order entry system (CPOE), aim to ensure physician aware of the risk at the moment of patient clinic visit. **METHODS:** We included outpatients with pioglitazone use from January 1, 2006 through July 31, 2011. For high risk patients, who are male, prescribed pioglitazone more than 1 year and cumulative dose reached 28000mg, clinical pharmacists will established warning message in CPOE. The message was to inform physician the patient was at high risk for bladder cancer, and should care about the symptoms of bladder cancer, such as hematuria; urgent need to urinate or pain while urinating; pain in back or lower abdomen. **RESULTS:** Overall 3196 patients had ever prescribed pioglitazone. The mean age was 63.2 \pm 11.9 years, and 1519 (49%) of the patients were male. Five (0.16%) patients with the diagnosis of bladder cancer. There were 1874 patients with currently pioglitazone use, 629 (33.5%) patients prescribed pioglitazone more than 1 year, 160 (8.5%) patients cumulative dose reached 28000mg, and 75 (4%) of our patients were at high risk for bladder cancer. Eighteen (24%) high risk patients were discontinued pioglitazone after FDA announcement, another 18 (24%) patients because of warning message established by clinical pharmacists. Twenty six (66.7%) patients have urine test, 5 (12.8%) with positive occult blood. **CONCLUSIONS:** From the retrospective results, there was no association between pioglitazone use and bladder cancer in our hospital. The communication by using electronic message in CPOE enhanced the awareness of physician. Clinical pharmacists will prospectively establish the warning message for patient with high risk.

DIABETES/ENDOCRINE DISORDERS - Cost Studies

PDB17

COMPARISON OF CLINICAL AND ECONOMIC OUTCOMES ASSOCIATED WITH DPP4 INHIBITORS (DPP4i) VERSUS SULFONYLUREA (SU) IN COMBINATION WITH METFORMIN (MET) OR PIOGLITAZONE (PIO) FOR THE TREATMENT OF TYPE 2 DIABETES MELLITUS (T2DM)

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OBJECTIVES: To compare diabetes-related complications, utilizations and costs between diabetes patients treated with DPP4i-based combinations (DPP4i+MET or DPP4i+PIO) vs. SU-based combinations (SU+MET or SU+PIO). **METHODS:** Market-Scan, a U.S. database of insured members, was analyzed to retrospectively compare outcomes between patients treated with DPP4i and SU combinations. The study sample consisted of T2DM patients who received DPP4i or SU combinations and had continuous eligibility from 6 months prior to and 12 months following the index date (date of combination therapy initiation). Rates of diabetic complica-